Waste Management BMPs

Waste Management BMPs for construction sites are discussed in this Field Manual in the indicated Sections:

- Solid Waste Management
- Liquid Waste Management
- Hazardous Waste Management
- Sanitary and Septic Waste Management
- Concrete Waste Management
- Spill Prevention, Control and Cleanup

Solid Waste Management

Solid waste management BMPs are designed to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, or removal of construction site wastes. The BMPs presented below can be implemented on all construction projects that generate solid wastes. Solid wastes include but are not limited to:

- Construction wastes including brick, mortar, timber, steel and metal scraps, sawdust, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam and other materials used to transport and package construction materials.
- Highway planting wastes, including vegetative material, plant containers, and packaging materials.
- Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

BMPs

- Instruct employees and subcontractors on identification of solid waste and hazardous waste and proper disposal procedures, and encourage these procedures to be followed.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Wherever possible, minimize production of solid waste materials.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project and properly serviced.
- Frequent garbage removal helps maintain clean construction sites and minimizes the exposure of waste to storm water.

- The site should be kept clean of litter debris.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage system, drainage grates, trash racks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods. These containers should be handled and by trash hauling contractors. Only watertight dumpsters are acceptable for use on-site.
- Construction debris and litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly regardless of whether the litter was generated by the Contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, storm water drainage systems or watercourses.
- Solid waste storage areas should be located at least 50-feet from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.
- Dumpster washout on the project site is not allowed.
- Plan for additional containers during the demolition phase of construction.
- Plan for more frequent pickup during the demolition phase of construction.
- Construction waste should be stored in a designated area approved by the CRM and should be removed from the site every two weeks or directed by the Engineer or CRM.
- Segregate potentially hazardous waste from non-hazardous construction site waste.

- Make sure the toxic liquid wastes (e.g., used oils, solvents, and paints) and chemical (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

- For disposal of hazardous waste, see section on *Hazardous Waste Management.* Have hazardous waste hauled to an appropriate disposal and/or recycling facility.

- Salvage or recycle useful vegetation debris, packaging and/or surplus building materials when practical. For example, trees and shrubs from land clearing can be converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Inspection and Maintenance

The Engineer or CRM should monitor onsite solid waste storage and disposal procedures.

Inspect site for litter and debris.

Solid Waste Management

Liquid Waste Management

Liquid waste management BMPs are designed to prevent or minimize the discharge of pollutants to the storm drain system or receiving waters as a result of the creation, collection, and disposal of non-hazardous liquid wastes. Liquid waste management BMPs are applicable to construction projects that generate any of the following non-hazardous byproducts, residuals, or wastes:

- Drilling slurries and drilling fluids;
- Grease-free and oil-free wastewater and rinse water;
- Dredgings; and,
- Other non-storm water liquid discharges not permitted by separate permits.

Disposal of some liquid wastes may be subject to specific laws and regulations, or to requirements of other permits secured for the construction project (e.g., other NPDES permits, Army Corps of Engineers permits, etc.).

This section does not apply to dewatering operations (see *Construction Dewatering*) or to permitted non-storm water discharges (see *Sections* various non-storm water discharges).

BMPs

General Practices

- The Engineer or CRM should oversee and enforce proper liquid waste management procedures and practices.
- Instruct employees and subcontractors how to safely differentiate between non-hazardous liquid waste and potential or known hazardous liquid waste.

- Instruct employees, subcontractors, and suppliers that it is unacceptable for any liquid waste to enter any storm drainage structure, waterway, or receiving water.

- Educate employees and subcontractors on liquid waste generating activities, and liquid waste storage and disposal procedures.

- Incorporate the discussion of proper disposal procedures into regular safety meetings.

- Apply the BMPs identified in *Vehicle and Equipment Washing*, for managing wash water and rinse water from vehicle and equipment cleaning operations.

Containing Liquid Wastes

- Drilling residue and drilling fluids should not be allowed to enter storm drains and watercourses and should be disposed of outside the highway right-of-way in conformance with the applicable SCDOT Standard Specification.

- If an appropriate location is available, as determined by the Engineer or CRM, drilling residue and drilling fluids may be dried by infiltration and evaporation in a containment facility constructed as described in *Concrete Waste Management* section.

- Liquid wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, should be contained and not allowed to flow into drainage channels or receiving waters prior to treatment.

- Contain liquid wastes in a controlled area, such as a holding pit, sediment basin, roll-off bin, or portable tank.

- Containment devices must be structurally sound and leak free. Containment devices must be of sufficient quantity or volume to completely contain the liquid wastes generated.

- Take precautions to avoid spills or accidental releases of contained liquid wastes. Apply the education measures and spill response procedures outlined in the *Spill Prevention, Control and Cleanup* section.

- Do not locate containment areas or devices where accidental release of the contained liquid can threaten health or safety, or discharge to water bodies, channel, or storm drains.

Capturing Liquid Wastes

- Capture all liquid wastes running off a surface, which has the potential to affect the storm drainage system, such as wash water and rinse water from cleaning walls or pavement.

- Do not allow liquid wastes to flow or discharge uncontrolled. Use temporary dikes or berms to intercept flows and direct them to a containment area or device for capture.

- If the liquid waste is sediment laden, use a sediment trap (*see Section Temporary Sediment Dam*) for capturing and treating the liquid waste stream, or capture in a containment device and allow sediment to settle.

Disposing of Liquid Wastes

- Liquid wastes, such as from dredged material, may require testing and certification whether it is hazardous or not before a disposal method can be determined.

- For disposal of hazardous waste, see section on *Hazardous Waste Management.*

- If necessary, further treat liquid wastes prior to disposal. Treatment may include, though is not limited to, sedimentation, filtration, and chemical neutralization.

Inspection and Maintenance

- Spot check employees and subcontractors at least monthly throughout the job to ensure appropriate practices are being employed.
- Remove deposited solids in containment areas and capturing devices as needed, and at the completion of the task. Dispose of any solids as described in section on *Solid Waste Management*.
- Inspect containment areas and capturing devices frequently for damage, and repair as needed.

Liquid Waste Management

Hazardous Waste Management

The BMPs described in this section are designed to minimize or eliminate the discharge of pollutants from construction site hazardous wastes to the storm drain systems or to watercourses. These BMPs apply to all construction sites. Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum products;
- Asphalt products;
- Concrete curing compounds;
- Pesticides;
- Acids;
- Paints;
- Stains;
- Solvents;
- Wood preservatives; and,
- Roofing tar.

Hazardous products may include one or more of the following words on the label: Caustic; Caution; Combustible; Corrosive; Danger; Explosive; Flammable; Poisonous; Volatile; or Warning.

Use of the BMPs described below, does not relieve SCDOT or their contractors from responsibility for compliance with all federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.

BMPs

Education

- Educate employees and subcontractors on hazardous waste storage and disposal procedures and on potential dangers to humans and the environment from hazardous wastes.

- Instruct employees and subcontractors in identification of hazardous waste.

- Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings).

- The Engineer should oversee and enforce proper hazardous waste management procedures and practices.

Storage Procedures

- Buy and use only what is needed. Leftovers need to be stored, reused, given away, recycled, or disposed of safely. Look for nontoxic or less toxic options (check with materials specialists).

- Try to keep products in original containers and always keep them well-labeled. If the product must be transferred to smaller containers, use the proper size funnel and avoid spills.

- Labels can fall off with weathering. To prevent this, cover labels with transparent tape. To re-label, use a metal tag attached to the container or use a stencil and spray paint.

- Keep corrosive liquids away from flammable liquids.

- Wastes should be stored in sealed containers constructed of a suitable material and should be labeled as required federal regulations.

- All hazardous waste should be stored, transported, and disposed as required by federal regulations.

- Waste containers should be stored in temporary containment facilities that should comply with the following requirements:

- Temporary containment facility should be impervious to the materials stored there for a minimum contact time of 72-hours.
- Temporary containment facilities should be maintained free of accumulated rainwater and spills. In the event of spills or leaks accumulated rainwater and spills should be placed into drums after each rainfall. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids should be sent to an approved disposal site.
- Provide sufficient separation between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Temporary containment facilities should be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs. A storage facility having a solid cover and sides is preferred to a temporary tarp. Storage facilities should be equipped with adequate ventilation.

- Drums should not be overfilled and wastes should not be mixed.

- Unless watertight, do store containers of dry waste on pallets.

- Paint brushes and equipment for water and oil based paints should be cleaned within a contained area and should not be allowed to contaminate site soils, watercourses or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused should be disposed of as hazardous waste.

- When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths should be disposed of as solid waste with other construction debris.

- For water-based paint, clean brushes to the extent practical, and rinse to a drain leading to a sanitary sewer where permitted, or into a concrete washout pit.

- For oil-base paints, clean brushes to the extent practical and filter and reuse thinners and solvents.
- Ensure that adequate hazardous waste storage volume is available.
- Ensure that hazardous waste collection containers are conveniently located.
- Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.
- Minimize production or generation of hazardous materials and hazardous waste on the job site.
- Use containment berms in fueling and maintenance areas and where the potential for spills is high.
- Segregate potentially hazardous waste from non-hazardous construction site debris.
- Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.
- Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
- Place hazardous waste containers in secondary containment.
- Do not allow potentially hazardous waste materials to accumulate on the ground.
- Do not mix wastes.

Disposal Procedures

- Use all of the product before disposing of the container.
- Waste should be disposed of outside the highway right-of-way within 90 days of being generated, or as directed by the Engineer.
- Waste should be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
- A DHEC certified laboratory should sample waste and classify it to determine the appropriate disposal facility.
- Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for solid waste construction debris.
- Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
- Recycle any useful material such as used oil or water-based paint when practical.

Inspection and Maintenance

- A foreman and/or construction supervisor should monitor on-site hazardous waste storage and disposal procedures.
- Waste storage areas should be kept clean, well organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.
- Storage areas should be inspected in conformance with the provisions in the contract documents.

- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.
- Clean hazardous spills should and report conformance with the applicable MSDS and the instructions posted at the project site.
- The National Response Center at (800) 424-8802, should be notified of spills of federal reportable quantities in conformance with the federal regulations.
- Copy of the hazardous waste manifests should be provided

Poor Hazardous Waste Management

Good Hazardous Waste Management

Sanitary/Septic Waste Management

The BMPs provided in this section may be used to minimize or eliminate the discharge of construction site sanitary/septic waste materials to the storm drain system or to watercourses. Sanitary/septic waste management BMPs are applicable on all construction sites that use temporary or portable sanitary/septic waste systems.

BMPs

Education

- Educate employees, subcontractors, and suppliers on sanitary/septic waste storage and disposal procedures and the potential dangers to humans and the environment from sanitary/septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary/septic waste.
- Discuss and reinforce disposal procedures during regular safety meetings.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation.
- Wastewater should not be discharged or buried within the highway right-of-way.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.
- If using an on site disposal system, such as a septic system, comply with local health agency requirements.

- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges.

- Ensure that sanitary/septic facilities are maintained in good working order by a licensed service. Use only reputable, licensed sanitary/septic waste haulers.

Inspection and Maintenance

Monitor onsite sanitary/septic waste storage and disposal procedures at least weekly.

Sanitary and Septic Waste Management

Sanitary and Septic Waste Management

Concrete Waste Management

This section presents BMPs that are designed to minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses. Concrete waste management BMPs should be implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Slurries containing Portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition. See also the section on *Paving and Grinding Operations*.
- Concrete trucks and other concrete-coated equipment are washed on site, when approved by the Engineer. See also *Vehicle and Equipment Washing* and *Concrete Truck Washout.*
- Mortar-mixing stations exist.

BMPs

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management BMPs described in this section.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC slurry or hardened wastes should be collected and properly disposed of outside the highway right-of-way in conformance with Standard Specifications or placed in a temporary concrete washout facility.

- Install a sign adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

- A foreman and/or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, and grooving to ensure proper methods are implemented.

- Do not allow saw-cut PCC slurry to enter storm drains or watercourses. See also *Paving and Grinding Operations* and *Liquid Waste Management*. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine. Saw cutting residue should not be allowed to flow across the pavement, and should not be left on the surface of the pavement.

- Vacuum slurry residue and dispose in a temporary facility (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below) and allow slurry to dry. Dispose of dry slurry residue in accordance with *Solid Waste Management*.

- Collect and dispose of residue from grooving and grinding operations in accordance with *Solid Waste Management.*

Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by the Engineer or CRM. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.

- Install a sign adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities should have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

- Perform washout of concrete mixer trucks in designated areas only. Washout may be collected in an impermeable bag for disposal. See also *Concrete Truck Washout*.

- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per *Solid Waste Management*.

Inspection and Maintenance

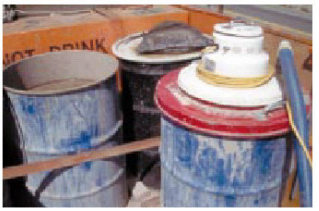
- The Engineer or CRM should monitor on site concrete waste storage and disposal procedures at least weekly.

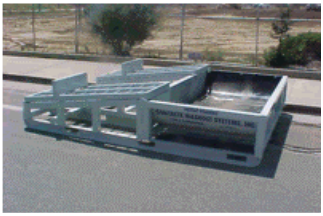
- The Engineer or CRM should monitor concrete working tasks, such as saw cutting, coring, grinding and grooving daily to ensure proper methods are employed.

- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4-inches for above grade facilities and 12-inches for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition.

- Existing facilities should be cleaned, or new facilities should be constructed and ready for use once the washout is 75% full.

- Temporary concrete washout facilities should be inspected for damage (i.e., tears in PVC liner, missing sandbags, etc.). Damaged facilities should be repaired immediately.





Concrete Waste Management

Spill Prevention Control and Cleanup (SPCC)

The BMPs described below should be implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses. They apply to all construction projects and should be utilized anytime chemicals and/or hazardous substances are stored on site. Substances may include, but are not limited to:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals
- Fuels
- Lubricants, and
- Other petroleum distillates

To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.

Develop and implement a SPCC Plan as part of the SWPPP if appropriate for the construction site involved. The SPCC Plan will identify persons responsible for implementing the plan if a spill of a dangerous or hazardous waste should occur.

If a spill, regardless of size, of a hazardous substance could reach surface waters, DHEC must be notified. When reporting a spill, the following information must be provided:

- Reporting party;
- Material released;

- Concentration of material;
- Contact phone number(s);
- Resource damages (e.g., dead fish);
- Location;
- Responsible party;
- Quantity of spill; and,
- Cleanup status.

Procedures and practices presented in this BMP are general. The site Contractor should identify appropriate practices for the specific materials used or stored on-site.

BMPs

Education

- Educate employees and subcontractors on what a "significant spill" is for each material they use, and what is appropriate response for "significant" and "insignificant" spills.

- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).

- Provide specific cleanup instructions for different products handled on-site.

- Assign a person to be in charge of cleanup assistance.

- Prepare spill containment and cleanup lists that are easy to find and use.

- Post a summary of the cleanup plan at appropriate locations.

Cleanup and Storage Procedures

- If a spill occurs, demobilize it as soon as possible.
- If there is a chance that the spill could enter a storm drain or sewer, plug the inlet and turn off or divert any incoming water.
- Cover the spill with absorbent material such kitty litter or sawdust. Do not use straw. Dispose of the used absorbent per manufacturer's instructions. If the spill is flammable, dispose of as directed by the local fire marshal.
- Keep the area well ventilated.
- Minor Spills – Minor spills typically involve small quantities of oil, gasoline, paint, etc., which can be controlled by the first responder at the discovery of the spill. Use absorbent materials on small spills rather than hosing down or burying the spill.
- Semi-Significant Spills – Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
- Contain spills immediately:

– If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
– If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike.
– If the spill occurs during rain, to the extent that it doesn't compromise clean up activities, cover spill with tarps or other material to prevent contaminating runoff.

- Significant/Hazardous Spills – For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up the spill until the appropriate and qualified staff has arrived at the job site.

- Spills should not be buried or washed with water.

- Used clean up materials, contaminated materials, and recovered spill material that are no longer suitable for the intended purpose should be stored and disposed of properly.

- Water used for cleaning and decontamination should not be allowed to enter storm drains or watercourses and should be collected and disposed of as described in *Liquid Waste Management*.

- Proper storage, clean-up and spill reporting instructions for hazardous materials stored or used on the project site should be posted at all times in an open, conspicuous and accessible location.

- Waste storage areas should be kept clean, well organized and equipped with ample clean-up supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers and liners should be repaired or replaced as needed to maintain proper function.

Inspection and Maintenance

- Verify weekly, that spill control clean up materials are located near material storage, unloading and use areas.

- Update SPCC plans and stock appropriate clean-up materials whenever changes occur in the types of chemicals used or stored onsite.

Spill Prevention, Control and Cleanup

Spill Cleanup Kit